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APPLIED FORESTRY NOTES

NORTHERN ROCKY MOUNTAIN
FOREST AND RANGE EXPERIMENT STATION

No. 83 Missoula, Montana February 1938

BRUSHFIELD REFORESTATION IN THE ST. JOE NATIONAL FOREST, IDAHO[1/]

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Some of the finest western white pine timber ever logged was taken about 20 years ago from Benewah, Latah, and the western portion of Clearwater Counties of northern Idaho. This area is an extension of the gently rolling hills and deep fertile soil of the famed Palouse wheat country. On extensive portions of this area heavy logging and subsequent burning have been followed by the growth of a dense brush cover composed principally of ceanothus (Ceanothus sanguinius Pursh.) and willow (Salix sp.). A general view of a typical brushfield is shown in plate 1. On some portions of these areas, particularly on north-facing slopes, seedlings of western white pine and a few other species are now slowly coming up through the brush and will probably form at least a partial stand in the future. In other places, especially on south-facing slopes, seedlings are either absent or are being suppressed because of their inability to compete with the brush. Artificial reforestation of much of this brush-covered area will be necessary to restore its timber productivity.

In a large brushfield area recently acquired by the St. Joe National Forest near Beal's Butte, some experiments were initiated in order to discover practical reforestation methods. Clearing strips through the brush with a bulldozer

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1/ A cooperative project of the Northern Rocky Mountain Forest and Range Experiment Station, the St. Joe National Forest, and the Region One Planting Office.

and broadcast burning has been done in California brushfields preparatory to the establishment of plantations. These treatments have been adapted to this experiment. Although the experiment has not yet produced conclusive results which would indicate the best preparatory treatment, methods used and results to date are presented as a progress report.

Within an area of about 9 acres, 3.6 miles (18,810 feet) of parallel strips 8 feet wide and about 12 feet apart were cleared with a bulldozer, a Cletrac 55 with a road builder blade. With this spacing, a bare area of 3.5 acres or about 40 percent of the total area was produced. Stripping was done at the rate of 0.54 miles per day with a gas consumption of 25.6 gallons per day or 112 feet per gallon.

The road builder blade used on the bulldozer removed top soil to a depth varying between 4 and 10 inches in most places. The removal of top soil may seriously decrease the site quality of the strips. The use of a blade with teeth along the lower edge, such as is used in the California Region, might permit stripping without removal of so much top soil.

A fire line with a total length of 1.9 miles (9,900 feet) was cleared with the bulldozer around the perimeter of an 85-acre tract. The brush on this area was burned October 16, 1936. The photographs in plate 1 show how vigorously the brush, especially the willow, grew back during the growing season following burning. An attempt to burn the brush on a portion of the stripped area within the fire line was made, but the fire was not sufficiently intense to kill the brush. In the summer of 1937 this brush did not differ in appearance from unburned brush.

Portions of the strips were planted May 18, 1936 with western white pine (Pinus monticola D. Don.) and ponderosa pine (Pinus ponderosa Lawson). The remainder of the strips, the burnt area and a small area in natural brush were planted May 11-23, 1937. Most of the burnt area was planted with ponderosa pine. Detailed survival counts were made of the seedlings under all of the various conditions on September 22, 1937.

The stock of western white pine planted in 1937 showed practically 100 percent survival after one growing season, both on the burnt area and under the natural brush. On the stripped area survival of seedlings planted in 1937 was appreciably less being only 82 percent. Survival of seedlings planted on the strips in 1936 was about the same as those planted in 1937. Although survival was good in the natural

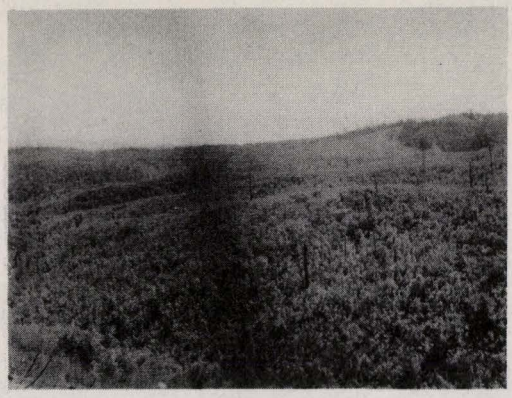
brush, the seedlings do not appear to be as vigorous as those on the burnt area and in the strips. It is doubtful whether many of these seedlings can withstand the root competition of the brush long enough to overtop and kill off the brush.

Survival of seedlings of ponderosa pine planted in the spring of 1937 was not appreciably different after one growing season on the burnt area, the strips, or under natural brush. Survival was approximately 93 percent in all cases. Seedlings planted on the strips in 1936 showed a survival percentage of 72 after two growing seasons.

Of importance in the strip plantings is the direction of the strips and the spacing of the seedlings within the strip. On strips running east and west, survival, especially that of western white pine, was better along the south edges of the strips than in either the center rows or the rows along the north edges. The greater amount of shade received by the seedlings in the south rows seems to be significant.

An obstacle to either stripping or burning is the encouragement of Ribes, the alternate host of the white pine blister rust. This weed seems to be held fairly well in check by the dense brush cover, but on the burned and stripped areas a number of new Ribes seedlings have appeared. The extent of an increase in the Ribes population which might be caused by these treatments is not known, but it is a point to be carefully considered in selecting a method of brushfield reforestation.

In general the site conditions on these deciduous brushfields do not appear to be as severe as, for example, on the evergreen brushfields of California. If general vigor and survival of seedlings after the first season can be used as an indicator, burning the brush appears to be a satisfactory and economical treatment for preparing these brushfields for planting provided that Ribes can be controlled. The results of future examinations should bring out more definitely the best treatment. Additional studies on the effect of machinery and methods on survival in other areas are necessary to develop a sound brushfield reforestation program.



GENERAL VIEW OF BRUSH FIELD

A SOUTH SLOPE ONE YEAR AFTER BURNING SHOWING A SEVERELY BURNT EXPOSED SLOPE AND A MODERATELY BURNT DRAW.

STRIPS CLEARED WITH A BULLDOZER THRU UNBURNT BRUSH.

A SEVERELY BURNT SOUTH SLOPE ONE YEAR AFTER BURNING SHOWING NEW GROWTH OF *CEANOTHUS* BRUSH.

A MODERATELY BURNT DRAW ONE YEAR AFTER BURNING SHOWING NEW GROWTH OF WILLOW BRUSH.

PLATE I. CLEARING METHODS PREPARATORY TO REFORESTATION OF BRUSH FIELDS IN ST. JOE NATIONAL FOREST. IDAHO